

Triangle lake Herbicide Properties/Effects/Chemical Reactions

Using the list of herbicides sprayed on forest properties around Triangle Lake, I have consulted with the BLM OR State Office Draft Environmental Impact Statement for analysis in detail of uses, restrictions, actions in the environment for each of the listed Herbicides. Below are notes taken for each Herbicide almost word for word from the document above.: Page numbers refer to the Environmental Impact Statement document above.

IMAZAPYR Below loc of 0.1, unlikely to pose risk. Low risk under direct spray for small animals . Low risk for consumption of contaminated vegetation for large mammals. No livestock restrictions for treated area.

Water Quality Issues: Is not known to be a groundwater contaminant (p.163) Is believed to be a water contaminant: (p.165) Imazapyr is rapidly degraded by sunlight in aquatic solutions with a half-life of 2 days. **But Does NOT appear to degrade in anaerobic systems, such as wetland soil or lake or pond sediment and will bind strongly to peat.** (p163) Aquatic dissipation half-lives have been reported from 30 days (water column) to **6.7years in anaerobic sediments.**(p.165). Little is known about its occurrence, fate, or transport in surface water or groundwater. In one study IMAZAPYR was detected in 4% of 133 samples taken from streams . but not detected in reservoirs or groundwater. (p.163) Because the herbicide label for Plateau in which imazapic is the active ingredient, states that **IMAZAPYC is believed to be a water contaminant.** (BASF 2004)(p,165)

As you may guess the conclusions on page 163 do not agree with p 165 , I would conclude more sampling and testing for this herbicide's effect on water is needed.

What influence has yearly spraying of IMAZAPYR had on the Lake and Pond sediment, peat in the Triangle Lake Area.??

HEXAZINONE Livestock: this material has low to moderate chronic risk to large mammals. However the caution is as follows: Live stock should not be grazed , nor forage or hay cut on treated areas for **60 days after application.** So obviously this herbicide lingers for about 60 days—2months.

Water Quality Issues: Hexazinone has been **identified as a ground water contaminant in seven states.** EPA requires a groundwater advisory on product labels stating that this product must not be used on permeable soils.. Hexazinone does not bind strongly to particulates or sediments. The main method of degradation is by micro-organisms in soils. The average half-life in soils and water is 90 days. Has been detected in streams near terrestrial application sites up to 30 days after treatment . It was reported in runoff up to 6 months post-treatment in forestry dissipation study. Authors concluded that main stream (ie river flow) was in very low concentration. (P165)

However Triangle Lake and area is directly connected to small streams near the application site. After 3 months half of the product is still in some concentration in the streams near this area. Ground water studies not quoted. HAVE GROUND WATER STUDIES BEEN CONSIDERED ??

Human Health Risk : BLM cites **Medium Risk for consumption of Hexazinone contaminated pond water –short term.(p.83)** **Workers managing backpack sprayer,s, boom sprayers, and pilots and mixers of aerial spraying were said to have Low to Risk in contamination by Hexazinone.** (p.82)

METSULFURON METHYL

Livestock: Issues Dosage is reported to be restricted to 0.06oz active ingredient per acre. At that concentration it poses only low acute risk to small mammals under 100% direct spray. Low risk to large mammals after consumption of contaminated vegetation.

Water Quality Issues: Metsulfuron methyl has a half-life of 3 weeks in acidic systems. The persistence of metsulfuron methyl (initial concentration of 10ug/L) was investigated using in-situ enclosures in a woodland/boreal forest lake. The half-life was ~29 days.(p.165) T Although not known as a ground water contaminant, it has **HIGH POTENTIAL to LEACH into GROUNDWATER. (P.165).**

Triangle Lake is woodland but not boreal what would its half-life be?? Would woodland systems not be considered an acidic environment?

CLOPYRALID

Livestock issues: Has a low chronic risk for large mammals (sample is 154 lb deer) consuming on-site contaminated vegetation. However livestock should NOT be transferred from treated grazing areas to susceptible broad leaf crop areas without allowing 7 days on untreated pasture(p.229).

To translate this: in **mammals elimination of this herbicide takes up to 6 days : hence faeces and urine are contaminated up to 6 days enough to cause the active ingredient to kill sensitive crops . What about contaminated people??**

Water Issues: Said to have Moderate persistence in water. And **WILL LEACH UNDER FAVORABLE CONDITIONS.** There was a study in 1997 by Rice et al of an aerial application of CLOPYRALID . It was a short-term monitoring of this substance in **surface water**. No major off-site movement has been documented. It is not known as a ground water contaminant. Does not bind with suspended particles in water but is dissipated by bio-degradation in aquatic sediments. Average half-life has been measure at 9 to 22 days., based on a study in 1998 . These two studies are cited in SERA review. 2004. (p164)

Since it has Moderate persistent in water **DOES CLOPYRALID LEACH INTO WELLS.?** What conditions pertained to the two earlier studies.? Was this forest land with steep slopes?or a crop situation on flat ground. ?

Human Health evidence: **BLM sites LOW risk after consumption of clopyralid- contaminated water after a spill.--short term. (p. 83)**

PICLORAM

Livestock issues: In general livestock should not be grazed on treated areas, nor should hay be cut for 2 weeks after treatment. (p230) This is considered a low to moderate risk.

Water issues: It is considered to be MODERATELY persistent in water. (p.167). But it can move off-site through surface or subsurface runoff. It has been **detected in the GROUNDWATER of 11 STATES.** Does not bind strongly with soil particles and is not degraded rapidly in the environment. In 1997 concentrations in runoff have been reported great enough to damage crops.(p.165). **EPA reported picloram stable to hydrolysis and unlikely to degrade in ground water, even over several years.** Maximum picloram runoff generally occurs following the first significant rainfall, after which runoff concentrations drop to levels that **persist up to 2 years post-application(P.166) .**

If this substance were be tested for in wells, groundwater etc. summer testing in the dry season would not find the newest accumulation due to runoff pattern. Post application in the Spring, a wetter season, would be the best time to test

Human Health issues: **BLM cites Low Risk after consumption of Picloram contaminated water** short term after a spill. (p.83)

TRICLOPYR is used to selectively manage woody plants that are unwanted in the tree plantation. It does not target grasses.

Livestock: Reportedly Triclopyr could cause exposure scenarios if livestock are not removed. However there are **no grazing restrictions except for lactating dairy cattle**. Hay should not be harvested until after 14 days. Cattle to be slaughtered should be removed from treated pasture 3 days prior to slaughter.

Human risk:

BLM cites **Low to Medium risk after consumption of Triclopyr-contaminated pond water in a spill short term**. A woman receiving direct spray to legs was said to have **Low to Medium Risk**. **Workers were said to have low to medium risk from Triclopyr in jobs requiring Back pack spray, working near a boom spray, and pilots and mixers managing aerial spraying. Low risk in wearing Triclopyr contaminated gloves.**

Don't we wonder about **Nursing Mothers** and their contamination.? **Testing Breast Milk** seems like a logical step. Eating plants from gardens after spraying might be risky.

Water issues: There are two forms of triclopyr with BEE used for terrestrial applications.(p.163) BEE is problematic because it is not water soluble and can partition into organic materials and be transported into sediments where it is persistent. Forms can degrade to triclopyr acid which diffuses into water column. Considered moderately persistent. Not much evidence available.

2,4,D

Livestock issues: **Moderate chronic risk to livestock for consumption of on-site contaminated vegetation**. Should not be applied in pasture areas where livestock would consume only contaminated food. **Dairy animals should be kept out of 2,4-D sprayed areas for 7 days**. Grass for hay should not be harvested for 30 days after treatment. Meat animals should be removed from treated areas 3 days prior to slaughter.

These comments suggest the incorporated 2,4-D in the body takes up to 3 days to clear. Dairy cows are given special protection from spray contaminated forage as milk contamination would be detectable.

Water Issues: 2,4-D is a known Groundwater Contaminant. Potential for leaching into groundwater is moderate by its being bound to organic matter. Its half-life is short. (not given). Concentrations of up to 61 mg/L of 2,4-D have been reported immediately following direct application to water. Concentrations of low as 0.22mg/L can damage susceptible plants (p,162)

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Human Health issues: 2,4-D

Assessing Human Health Issues: **2,4-D** is considered

Low to medium risk for direct spray child,

Consumption of contaminated water after a spill Medium to High risk, Consumption of contaminated fruit low risk Consumption of contaminated fish Low risk Consumption of 2,4-D contaminated fruit Chronic or Longer term as low to medium risk.(83)

For 2,4-D Worker studies show low to medium risk for working persons with backpack sprayer, boom sprayers, pilot and mixer in aerial spray application, and contaminated gloves. (p.82)

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